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Response to Office Action Dated 09/09/2005

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1-50 are pending in this application.

Specification**New Title**

The Office requires a new title for this patent application, maintaining that the original title is not descriptive or indicative of the subject matter to which the claims are directed.

Applicant therefore requests that the former title be replaced with a new title: "Measuring Fuel by Counting Coulombs."

Rejection of the Claims**Rejection under 35 USC § 102(e)**

The Office rejected claims 1-50 as being anticipated by U.S. Patent Application, Publication No. 2003/0224224, entitled "Power Supply System" by Okada, et al., hereinafter the "Okada reference" or "Okada."

Claim 1

Claim 1 defines an apparatus, including:

a fuel cell for producing a flow of electric charges from a fuel;

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an electric charge counter coupled with the fuel cell, wherein counted electric charges are proportional to an amount of the fuel used in the fuel cell to produce the counted electric charges; and

a display coupled with the electric charge counter to show an amount of the fuel based on corresponding counted electric charges.

The Okada reference, on the other hand, does not show or disclose every element of claim 1. For example, Okada does not show or disclose an electric charge counter. The Okada reference discloses instead a battery and fuel cell combination power supply system 111. But the Okada power supply status detector 124 measures an amount of power remaining in the power storage source 122 (e.g., by measuring a decreasing voltage level of the battery). The Okada description of power remaining does not disclose counting in real time a quantity of electrons (e.g., in Coulombs) that is proportional to a quantity of fuel passing through a fuel cell. Moreover, the Okada "remaining fuel detector" 116a is merely a conventional "fuel gauge" as would be found on any automobile or other machine equipped with a fuel gauge and does not read on Applicant's subject matter of measuring fuel by counting coulombs.

In reference to the Office's position that "[Okada's] measurement is through adding and subtracting the correct amount taken into account temperature and pressure differential" it should be noted that Okada's use of temperature and pressure detection does not parallel the use of temperature and pressure measurements in Applicant's subject matter. In Okada, the reference to temperature in the temperature detector 116b and the temperature controller 117a pertains to a goal of maintaining the most favorable temperature for optimal

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functioning of the fuel cell 115 and power storage source 122. Both the Okada temperature detector 116b and voltage detector 116c are used to stop the power supply system 111 when the temperature of the system becomes too high or the voltage becomes too low (column 4, paragraph 46), respectively. The temperature detector 116b and the voltage detector 116c are not used to modify the readout of an electric charge counter, as in Applicant's claim 1.

Since the Okada reference does not show or disclose each element of Applicant's claim 1, Applicant respectfully suggests that the Okada reference does not anticipate claim 1 under U.S.C. §102(e). Applicant respectfully submits that claim 1 is allowable over the cited reference.

Claims 2-15

For at least the reasons set forth above with respect to claim 1, Applicant submits that dependent claims 2-15 are also allowable and are not anticipated by the Okada reference. Dependent claims contain the language of the claims from which they depend. Claims 2-15 depend from claim 1. Therefore, claims 2-15 should also be allowable.

Claim 16

Claim 16 defines a fuel cell, including:

a means for converting a fuel into a flow of electric charges, wherein the quantity of electric charges produced over time is proportional to the quantity of fuel molecules converted;

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a means for counting the electric charges in the flow; and
a means for displaying an amount of fuel molecules converted.

Applicant submits that claim 16 is not anticipated under U.S.C. §102(e) by the Okada reference for the same reasons explained for claim 1. As stated previously, the Okada power supply status detector 124 measures an amount of power remaining in the power storage source 122 (i.e., the battery) and does not disclose real time counting of a quantity of electrons (e.g., in Coulombs) that is proportional to a quantity of fuel passing by. Measurement of fuel by Coulomb counting is not disclosed by the Okada reference.

Since the Okada reference does not show or disclose each element of Applicant's claim 16, Applicant respectfully suggests that the Okada reference does not anticipate claim 16. Thus, Applicant respectfully submits that claim 16 is allowable over the cited reference.

Claims 17-31

For at least the reasons set forth above with respect to claim 16, Applicant submits that dependent claims 17-31 are also allowable and are not anticipated by the Okada reference. Dependent claims contain the language of the claims from which they depend. Claims 17-31 depend from claim 16. Therefore, these claims should also be allowable.

Claim 32

Claim 32 defines a fuel supply system, including:

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a fuel container for holding a remaining amount of fuel;
an electric charge counter to count an electric charge content of an amount of fuel taken from the fuel container, wherein the count of the electric charge content is proportional to the amount of the fuel taken from the fuel container; and
a display to show the remaining amount of fuel in the fuel container.

Applicant respectfully submits that claim 32 is not anticipated under U.S.C. §102(e) by the Okada reference, for similar reasons as explained above for claim 1. The Okada reference does not disclose an electric charge counter.

Since the Okada reference does not show or disclose each element of Applicant's claim 32, Applicant respectfully suggests that the Okada reference does not anticipate claim 32. Thus, Applicant respectfully submits that claim 32 is allowable over the cited reference.

Claims 33 & 34

For at least the reasons set forth above with respect to claim 32, Applicant submits that dependent claims 33 & 34 are also allowable over the Okada reference. Dependent claims contain the language of the claims from which they depend. Claims 33 & 34 depend from claim 32. Therefore, claims 33 & 34 should also be allowable.

Claim 35

Claim 35 defines a fuel gauge, comprising:

a charge counter to count electrical charges produced in a fuel cell by a fuel from a fuel supply; and

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a display to show an amount of the fuel based on the counted electrical charges.

Applicant respectfully submits that claim 35 is not anticipated under U.S.C. §102(e) by the Okada reference for similar reasons as explained above for claim 16. The Okada reference does not show or describe a charge counter to show an amount of fuel used in a fuel cell.

Since the Okada reference does not show or disclose each element of Applicant's claim 35, Applicant respectfully suggests that the Okada reference does not anticipate claim 35. Thus, Applicant respectfully submits that claim 35 is allowable over the cited reference.

Claims 36 & 37

For at least the reasons set forth above with respect to claim 35, Applicant submits that dependent claims 36 & 37 are also allowable over the Okada reference. Dependent claims contain the language of the claims from which they depend. Claims 36 & 37 depend from claim 35. Therefore, claims 36 & 37 should also be allowable.

Claim 38

Claim 38 describes a count interpreter for a charge counting fuel gauge comprising:

- a count calibrator; and
- a fuel loss compensator.

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Applicant respectfully submits that claim 38 is not anticipated under U.S.C. §102(e) by the Okada reference. For example, claim 38 describes a count calibrator. Since the Okada reference does not show or disclose an electric charge counter, it follows that Okada also does not show or disclose a count calibrator for a charge counter.

Since the Okada reference does not show or disclose each element of Applicant's claim 35, Applicant respectfully suggests that the Okada reference does not anticipate claim 35. Thus, Applicant respectfully submits that claim 35 is allowable over the cited reference.

Claims 39-44

For at least the reasons set forth above with respect to claim 38, Applicant submits that dependent claims 39-44 are also allowable over the Okada reference. Dependent claims contain the language of the claims from which they depend. Claims 39-44 depend from claim 38. Therefore, claims 39-44 should also be allowable.

Claim 45

Claim 45 describes a method that includes:

producing electric charges in a fuel cell using a fuel;
counting the electric charges to determine an amount of the fuel used to
produce the electric charges; and
displaying the amount.

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Applicant submits that claim 45 is not anticipated by §102(e) by the Okada reference for reasons similar to those explained above for claim 1. The Okada reference does not show or disclose "counting the electric charges to determine an amount of the fuel" as claim 45 does.

Since the Okada reference does not show or disclose each element of Applicant's claim 45, Applicant respectfully suggests that the Okada reference does not anticipate claim 45. Thus, Applicant respectfully submits that claim 45 is allowable over the cited reference.

Claims 46 & 47

For at least the reasons set forth above with respect to claim 45, Applicant submits that dependent claims 46 & 47 are also allowable over the Okada reference. Dependent claims contain the language of the claims from which they depend. Claims 46 & 47 depend from claim 45. Therefore, claims 46 & 47 should also be allowable.

Claim 48

Claim 48 describes a method that includes:

- connecting an electric charge counter to a fuel cell, wherein the fuel cell produces electric charges from a fuel;
- counting the electric charges; and
- displaying an amount of fuel corresponding to the counted electric charges.

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Applicant submits that the Okada reference does not anticipate claim 48 under U.S.C. §102(e) for similar reasons given for claim 1 above. The Okada reference does not show or disclose "displaying an amount of fuel corresponding to the counted electric charges."

Since the Okada reference does not show or disclose each element of Applicant's claim 48, Applicant respectfully suggests that the Okada reference does not anticipate claim 48. Thus, Applicant respectfully submits that claim 48 is allowable over the cited reference.

Claims 49 & 50

For at least the reasons set forth above with respect to claim 48, Applicant submits that dependent claims 49 & 50 are also allowable over the Okada reference. Dependent claims contain the language of the claims from which they depend. Claims 49 & 50 depend from claim 48. Therefore, claims 49 & 50 should also be allowable.

CONCLUSION


Applicant respectfully suggests that claims 1-50 are in condition for allowance and requests reconsideration and issuance of the subject application. Should any matter in this case remain unresolved, the undersigned attorney respectfully requests a telephone conference with the Examiner to resolve any such outstanding matter.

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Respectfully Submitted,

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